

# Research on the Mechanism of the Impact of Financial Technology on Green Economic Development in China

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## Abstract

The essence of financial technology is technology driven financial innovation. The application of financial technology in the field of green innovation conforms to the development of the times and will become the mainstream trend of financial industry development. The concept of "green recovery" is derived from the green development theory. This article first analyzes the application of fintech in the field of green innovation, then analyzes the mechanism of fintech's role in green development, and finally puts forward targeted suggestions for fintech's assistance in green economic development.

## Keywords

Financial technology, Green innovation, Green development, Mechanism of action.

## 1. Introduction

After the financial crisis broke out in 2008, the original financial organizations, products and services were impacted. The development of the information age and the digital economy called for more efficient and advanced financial intermediary organizations and forms, and financial technology came into being. According to the definition of the Financial Stability Council, fintech is based on a series of technological innovations such as big data, cloud computing, artificial intelligence, and blockchain. The essence of FinTech is technology driven Financial innovation. Financial technology innovation serves the development of the green economy and conforms to the new development concept of "innovation, coordination, green, openness, and sharing". Therefore, the application of financial technology in the field of green innovation will inevitably become the mainstream trend of the future development of the financial industry. The concept of "green recovery" is derived from the theory of green development and has received strong discussions and attention from various parties since it was proposed at the Boao Forum for Asia in 2010. At the 2022 annual meeting of the Boao Forum for Asia, it was proposed that we should take an open and green road to jointly forge the prospects of global economic recovery. Developing a green economy is the way to seek economic recovery and achieve sustainable development in the era of epidemic. Meanwhile, the climate crisis has raised a red alert. In the report of the 20th National Congress of the Communist Party of China, Xin Jinping called for "promoting green development and promoting harmonious coexistence between humans and nature", and green development has become a mainstream topic in today's era.

This article first analyzes the application of financial technology in the field of green innovation, then analyzes the mechanism of financial technology's role in green development to prepare, and finally proposes targeted suggestions for financial technology to assist in green economic development.

## 2. Literature Review

The academic community has conducted extensive research on topics such as financial technology and green economic recovery, and has made breakthrough progress. The existing research mainly focuses on the following three aspects:

(1) Research on the application of financial technology in the field of green innovation. The Paulson Foundation pointed out that financial technology has played an important role in the development of green finance. Hu, et al. (2023) found through empirical analysis that financial technology can reduce the carbon emission intensity of cities, and green policies have a positive promoting effect on this emission reduction effect. Zheng, et al. (2022) believe that Fintech and green finance share the same green gene and Fintech can support the innovative development of green finance, so it is necessary to improve the application efficiency of Fintech to build a green finance development pattern and take the green and low-carbon carbon cycle development path. Tian, et al. (2021) studied the mechanism of financial technology innovation in the economic field based on the empirical analysis of the dual path of Financial innovation and scientific and technological innovation.

(2) Research on green economic recovery and development. Wang, et al. (2021) believed that in the post epidemic era, promoting green transformation and upgrading, giving play to the supporting role of green finance for green economy, and driving high-quality development of China's economy with green recovery is the way out. Wang (2020) expounded the inevitability of green economic recovery based on the perspective of green development, and pointed out that green finance also continued to work in all aspects of economic recovery after the epidemic. Yuan, et al. (2022) concluded that green finance can promote green economic growth by improving the energy consumption structure and promoting the path of technological innovation and development.

(3) Research on impact of financial technology on economic development. There is a lot of research in the academic community on the promotion of high-quality economic development through financial technology. For example, Wang, et al. (2020) showed that financial technology skills promote high-quality economic development. Cui (2023) explored the internal mechanism of financial technology promoting high-quality economic development.

However, there is relatively little research on whether financial technology affects the development of green economy and its impact mechanism and path. The main innovation of this article is to study the application of financial technology and its impact on green economic development.

## 3. Financial Technology and Green Innovation

### 3.1. Financial Technology Services for Green Innovation Technology and Functions

Based on big data, artificial intelligence, cloud computing, blockchain and other technologies, Fintech injects green genes into traditional financial applications, and has achieved remarkable results in improving the accuracy of green project identification, improving the construction of green finance investment and financing system, improving the management and service efficiency of green information platform, monitoring green finance risks, encouraging green behavior of industrial customers, and promoting green economic development.

(1) Big data and cloud computing are mainly applied to green projects. Its function: help to objectively and accurately identify green projects that conform to the concept of green development, and effectively improve the HP of green finance.

(2) Artificial intelligence, big data and blockchain are mainly used in the green finance investment and financing system. Its function: ease the difficulties in investment and financing,

reduce financing costs, facilitate the connection between financial institutions and green projects, and help implement green finance policies.

(3) Artificial intelligence, machine learning, and big data are mainly applied to green information platforms. Its function: transforming the regulatory end of the green information platform and visualizing irregular data processing; Develop a green evaluation system and model to improve work efficiency.

(4) Cloud computing, remote sensing, automation and the Internet of Things are mainly used for risk monitoring of green finance. Its function is to automatically and intelligently obtain and manage data, conduct scientific analysis, statistical performance, and risk monitoring of green industries, and reduce systemic risks of green industries.

(5) The Internet of Things, blockchain, artificial intelligence, and big data are mainly applied to green industry customer behavior. Its function: relying on artificial intelligence to improve customer green profiles, and big data analysis to improve the accuracy of customer identification; The Internet of Things and blockchain technology record customers' low-carbon consumption behavior, promote and support customers' green and low-carbon consumption.

### **3.2. Application of Financial Technology in the Field of Green Innovation**

Green finance is the main application of financial technology in the green field. Financial technology and green finance have the same financial blood, and can not be separated. The application of FinTech in the field of green innovation in this paper is mainly to analyze the application and innovative development of FinTech in the field of green finance.

(1) Big data, artificial intelligence, and cloud computing technologies are the main technologies that rely on financial technology. However, due to the rapid development of the digital economy, blockchain technology and the Internet of Things technology may emerge as the main technologies driving the development of financial technology.

(2) Applied in the field of green finance, green finance products mainly include green funds, green credit, green trust, environmental equity trading, carbon finance, green insurance, green bonds, green leasing and other financial products, of which green funds and green credit are the most widely used. In addition, with the popularization of green and low-carbon concepts, the scale of carbon finance investment and financing is gradually increasing, and the application of carbon finance is popularized. It has become one of the main forces of green finance products.

(3) In terms of application scenarios, FinTech's application scenarios in the field of green finance include enterprise environmental data, ESG data and evaluation, energy efficiency management, green asset data, environmental risk monitoring, environmental benefit measurement, satellite environmental data, green assessment, information management statistics, risk monitoring management, transactions, business application management, and information sharing. Among them, the environment is the most widely used, such as ESG data and evaluation Enterprise environmental data and environmental risk monitoring.

### **3.3. Development Space for the Application of Financial Technology in the Field of Green Innovation**

Based on the rapid development of financial technology, China supports the sustainable development of green economy. The application of financial technology in the field of green innovation has broad prospects and development space. Finance needs to support the organic combination of technology, sustainable development, and digital HP to ensure the sustainable development of China's economy. Based on the above analysis and the content of the green report, the development space in the field of green innovation in financial technology includes ESG evaluation and investment Green agriculture, protection of biodiversity, management and accounting of carbon assets, financial transformation, etc.

(1) ESG evaluation and investment. ESG invests in green projects and green entities, and selects projects that meet green standards through project application forms; ESG assessment should refer to HP's characteristics and promote the common development of HP Finance and green finance.

(2) Green agriculture. Use digital technology to support the development of green agriculture industry, reduce agricultural energy consumption, help agriculture complete emission reduction tasks and guide green agriculture supply chain financing.

(3) Protect biodiversity. Protecting biodiversity is a key area that sustainable finance is about to focus on, and financial technology identifies hotspots through technologies such as the Internet of Things and remote sensing to protect organisms in a targeted manner; Integrate integrated biodiversity assessment tools into the financial institution system.

(4) Manage and account for carbon assets. Financial technology provides systematic solutions for the entire process of carbon management and carbon accounting system. The financial industry conducts carbon related financial businesses, controls the carbon emissions of enterprises, and reduces the total carbon emissions.

(5) Financial transformation. Fintech should help enterprises transform to green and low-carbon, expand the coverage of green finance system, and improve the policy framework of transformation finance.

#### **4. The Mechanism of the Impact of Financial Technology on Green Economic Development**

##### **4.1. Financial technology empowers green digital HP finance**

Use the "distributed ledger" tool in the FinTech blockchain technology to ensure the normal operation of the market mechanism of green finance and the construction of the green finance system, and combine it with the platform, clearing system and market supervision measures related to carbon trading, so that the "dual carbon" policy can be put into practice to achieve green digital HP finance. Financial technology empowers green digital inclusive finance in order to accelerate technological updates and progress in the field of green, and ensure sustainable and green economic development.

##### **4.2. Financial Technology Services for Green Economic Development**

In the process of promoting the development of the real economy through finance, government departments should closely communicate with relevant institutions in the financial industry, so that the financial industry can serve the green development of the economy. (1) For government departments, it is necessary to reasonably use financial technology to break the barriers of communication between the government, financial institutions and enterprises, support the construction of green finance information service platform, and ensure the interactive communication of green information; In addition, government departments should improve the efficiency of approval work for green project application and financing in the financial industry, and accelerate the process of financial industry supporting the development of green economy; (2) In the financial industry, the banking industry can adopt technologies such as big data and blockchain to intelligently price and manage risks in the green credit business of banks, in order to improve their ability to market green products; The insurance industry can play the role of a series of digital control technologies in financial technology to solve the related problems of green insurance in terms of system and services. For example, using artificial intelligence, image recognition, and Internet of Things technology can reduce the time for insurance companies to operate green insurance business, improve the service level of green insurance, and promote the green development of the main economy. Through

the joint efforts of the government and the financial industry, the financial industry can sustainably empower the development of a green economy.

#### **4.3. Financial technology supports the development of green economy**

By utilizing its technological foundation, fintech can promote the development of the financial industry in the field of green innovation. This is because fintech can improve the intermediary function of the financial industry in terms of green investment and financing structure and cost, green capital allocation efficiency, and other aspects. In this way, the financial sector can use fintech to guide capital flow to green, low-carbon, and sustainable industries, thereby promoting green economic development. Nowadays, The green industry has received national support and attention from all parties, and has broad development prospects, which will inevitably attract capital to flow into the green industry. The green development of the economy supported by financial technology is even more like a fish in water, and it is natural.

#### **4.4. Financial technology promotes green investment and financing activities**

Fintech conducts quantitative analysis on relevant investment and financing data, which makes it easier to accurately evaluate green finance products, and thus promotes the development of financial derivatives that can cope with risk shocks; Through the combination of financial means and green policies, we can improve the market competitiveness of green industry, comprehensively analyze market demand, enable the financial industry to provide effective services according to demand, and make green finance truly HP into the green field.

#### **4.5. Financial technology reduces the cost of green development for enterprises**

Financial technology can solve the financial difficulties faced by enterprises in the research and development and promotion of green products by expanding the channels for enterprise loans and reducing the difficulty of obtaining loans; The development of green finance needs a stable and perfect credit reporting system to match it. New technologies such as big data provide technical support for the establishment of a credit reporting system. A perfect credit reporting system can not only provide suggestions for financial institutions to lend and invest, but also strengthen the supervision and evaluation of the use of financial funds. It has rich financial products and perfect green industry infrastructure, Financial technology is bound to promote more efficient and sustainable green development of the economy.

### **5. Policy Recommendations**

In order to ensure that fintech continues to empower green economic development, the following policy recommendations are proposed for the process of promoting green economic development through fintech:

Firstly, improve the regulatory system. Establish a sound regulatory framework for fintech and clarify specific plans and guidelines for enabling green economic development through fintech. To improve the quality of environmental information disclosure by regulatory authorities, the relevant disclosure system should not only be some guiding suggestions, but should have unified standardization and strong constraints.

Secondly, properly handle conflicts. Properly handle the contradiction between financial profitability goal and green externality in the process of promoting green economic development of FinTech, so as to deepen the application of financial industry in the field of green innovation, avoid the occurrence of cases like "tragedy of the commons", and achieve the overall goal of profitability and sustainability.

Thirdly, establish a risk prevention system. With the rapid development of financial technology, financial business services are gradually disintermediated. Based on the cross market, cross



industry, cross time and space characteristics of financial operation, and the technology relied on by Financial innovation, it may increase the channels for risk transmission and diffusion, and the technology may also make the factors inducing risk more complex. Pay attention to the systematic risk monitoring and control of the financial system, and reduce the possibility of risk cross infection, Avoiding the impact of financial system risks on the sustainable development of the real economy and ensuring green development of the economy.

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